SIES Graduate School of Technology, Nerul
DEPARTMENT OF Computer Engineering
Course Outcomes

SE: III SEM (REV- 2019 'C' Scheme)

Subject- Applied Mathematics-III, Course Code- CSC301

CO1	Find Laplace transform and inverse Laplace transform of functions using the properties and properties
CO2	Find inverse Laplace transform using convolution theorem and partial fraction method
CO3	Expand periodic functions using Fourier series, understand the concept of half range sine and cosine series and Parseval's Identity
CO4	Understand the concept of complex variable, analytic functions, harmonic functions and harmonic conjugates
CO5	Apply the concept of correlation and regression to find correlation coefficient, rank correlation and regression lines
CO6	Find the probability using Baye's theorem, mean and variance of the probability distributions

Subject- Discrete Structures and Graph Theory, Course Code- CSC302

CO1	Understand the notion of mathematical thinking, mathematical proofs and to apply them in problem solving.
CO2	Ability to reason logically.
CO3	Ability to understand Relations, Functions, Diagraph and lattice.
CO4	Ability to understand and apply concepts of graph theory in solving real word problems.
CO5	Understand use of groups and codes in Encoding-Decoding.
CO6	Analyze a complex computing problem and apply principles of discrete mathematics to identify solutions.

Subject- Data Structure, Course Code- CSC303

CO1	Implement Linear and Non-Linear data structures.
CO2	Perform various operations like searching, insertion, deletion, and traversals on various data structures.
CO3	Describe various data structures, related terminologies, and their types.
CO4	Choose appropriate data structure and apply it to solve problems in various domains.
CO5	Analyze and implement appropriate searching techniques for a given problem.
CO6	Demonstrate the ability to analyze, design, apply and use data structures to solve engineering problems and evaluate their solutions.

Subject- Digital Logic & Computer Architecture, Course Code- CSC304

CO1	To learn different number systems and basic structure of computer system.

CO2	To demonstrate the arithmetic algorithms.
CO3	To understand the basic concepts of digital components and processor organization.
CO4	To understand the generation of control signals of computer.
CO5	To demonstrate the memory organization.
CO6	To describe the concepts of parallel processing and different Buses.

Subject- Computer Graphics, Course Code- CSC305

CO1	Describe the basic concepts of Computer Graphics.
CO2	Demonstrate various algorithms for basic graphics primitives.
CO3	Apply 2-D geometric transformations on graphical objects.
CO4	Use various Clipping algorithms on graphical objects
CO5	Explore 3-D geometric transformations, curve representation techniques and projections methods
CO6	Explain visible surface detection techniques and Animation.

Subject- Data Structure Lab, Course Code- CSL301

CO1	Students will be able to implement various linear and nonlinear datastructures.
CO2	Students will be able to handle operations like insertion, deletion, searching andtraversing on various data structures.
CO3	Students will be able to choose appropriate data structure and apply it in various problems.
CO4	Students will be able to select appropriate searching techniques for given problems

Subject- Digital Logic & Computer Architecture lab, Course Code- CSL302

CO1	To understand the basics of digital components
CO2	Design the basic building blocks of a computer: ALU, registers, CPU and memory
CO3	To recognize the importance of digital systems in computer architecture
CO4	To implement various algorithms for arithmetic operations.

Subject- Computer Graphics Lab, Course Code- CSL303

CO1	Implement various outputand filled area primitivealgorithms
CO2	Apply transformation,projection and clippingalgorithms on graphicalobjects.
CO3	Implementation of curve andfractal generation.
CO4	Develop a Graphicapplication/Animation basedon learned concept

Subject- Skill base Lab course: Object Oriented Programming with Java, Course Code- CSL304

CO1	Students will be able to apply fundamental programming constructs.

CO2	Students will be able to apply the concept of packages, classes and objects.
CO3	Students will be able to demonstrate the concept of strings, arrays and vectors.
CO4	Students will be able to implement the concept of inheritance and interfaces.
CO5	Students will be able to implement the concept of exception handling and multithreading.
CO6	Students will be able to develop GUI based application.

Subject- Mini Project – 1 A, Course Code- CSM301

CO1	Identify problems based on societal /research needs and apply Knowledge and skill to solve societal problems in a group.
CO2	Develop interpersonal skills to work as member of a group or leader.
CO3	Draw the proper inferences from available results through theoretical/ experimental/simulations.
CO4	Analyze the impact of solutions in societal and environmental context for sustainable development and Use standard norms of engineering practices
CO5	Excel in written and oral communication.
CO6	Demonstrate capabilities of self-learning in a group, which leads to lifelong learning and project management principles.

SE: IV SEM (REV- 2019 'C' Scheme)

Subject- Engineering Mathematics-IV, Course Code- CSC401

CO1	Apply the concepts of eigen values and eigen vectors in engineering problems.
CO2	Use the concepts of Complex Integration for evaluating integrals, computing residues & evaluate various contour integrals.
CO3	Apply the concept of Z- transformation and its inverse in engineering problems.
CO4	Use the concept of probability distribution and sampling theory to engineering problems.
CO5	Apply the concept of Linear Programming Problems of optimization
CO6	Apply the concepts of Non-Linear Programming Problems to engineering problems of optimization.

Subject-Analysis of Algorithm, Course Code- CSC402

CO1	Analyze the running time and space complexity of algorithms
CO2	Describe, apply and analyze the complexity of divide and conquer strategy.
CO3	Describe, apply and analyze the complexity of greedy strategy.
CO4	Describe, apply and analyze the complexity of dynamic programming strategy
CO5	Explain and apply backtracking, branch and bound.
CO6	Explain and apply string matching technique

Subject- Database Management System, Course Code- CSC403

CO1	Recognize the need of database management system.
CO2	Design ER and EER diagram for real life applications
CO3	Construct relational model and write relational algebra queries.
CO4	Formulate SQL queries
CO5	Apply the concept of normalization to relational database design.
CO6	Describe the concept of transaction, concurrency and recovery.

Subject- Operating System, Course Code- CSC404

CO1	Understand the objectives, functions and structure of OS
CO2	Analyze the concept of process management and evaluate performance of process scheduling algorithms.
CO3	Understand and apply the concepts of synchronization and deadlocks
CO4	Evaluate performance of Memory allocation and replacement policies
CO5	Understand the concepts of file management.
CO6	Understand the concepts of file management.

Subject -Microprocessor, Course Code- CSC405

CO1	Describe core concepts of 8086 microprocessor
CO2	Interpret the instructions of 8086 and write assembly and mixed language programs
CO3	Identify the specifications of peripheral chip
CO4	Design 8086 based system using memory and peripheral chips
CO5	Appraise the architecture of advanced processors
CO6	Understanding hyperthreading technology

Subject- Analysis of Algorithm lab, Course Code- CSL401

CO1	Implement the algorithms using different approaches
CO2	Analyze the complexities of various algorithms.
CO3	Compare the complexity of the algorithms for specific problem.

Subject- Database Management System Lab, Course Code- CSL402

CO1	Design ER /EER diagram and convert to relational model for the realworld application.
CO2	Apply DDL, DML, DCL and TCL commands
CO3	Write simple and complex queries
CO4	UsePL / SQL Constructs.
CO5	Demonstrate the concept of concurrent transactions execution and frontend-backend connectivity.

Subject- Operating System Lab, Course Code- CSL403

CO1	Demonstrate basic Operating system Commands, Shell scripts, System Calls and API wrt Linux
CO2	Implement various process scheduling algorithms and evaluate their performance.
CO3	Implement and analyze concepts of synchronization and deadlocks.
CO4	Implement various Memory Management techniques and evaluate their performance
CO5	Implement and analyze concepts of virtual memory.
CO6	Demonstrate and analyze concepts of file management and I/O management techniques.

Subject- Microprocessor Lab, Course Code- CSL404

CO1	Use appropriate instructions to program microprocessor to perform various tasks
CO2	Develop the program in assembly language for 8086
CO3	Demonstrate the execution and debugging of assembly language and mixed language programs

Subject- Skill Base Lab Course: Python Programming, Course Code- CSL405

CO1	Students will be able to apply basic concepts in python.
CO2	Students will be able to explore contents of files, directories and text processing with python
CO3	Students will be able todevelop programs for data structure using built-in functions in python.
CO4	Students will be able to explore Django web framework for developing python-based web application.
CO5	Students will be able to excel in Multithreading concepts using python.
CO6	Students will be able to apply NumPy and pandas libraries

Subject- Mini Project 1-B, Course Code- CSM401

CO1	Identify problems based on societal /research needs.
CO2	Apply Knowledge and skill to solve societal problems in a group.
CO3	Develop interpersonal skills to work as member of a group or leader.
CO4	Draw the proper inferences from available results through theoretical/ experimental/simulations.
CO5	Analyze the impact of solutions in societal and environmental context for sustainable development.
CO6	Use standard norms of engineering practices
CO7	Excel in written and oral communication.
CO8	Demonstrate capabilities of self-learning in a group, which leads to lifelong learning.
CO9	Demonstrate project management principles during project work.

TE: V SEM (REV- 2016 'CBCGS' Scheme)

Subject- Microprocessor, Course Code- CSC501

CO1	Describe architecture of x86 processors
CO2	Interpret the instructions of 8086 and write assembly and mixed language programs
CO3	Explain the concept of interrupts
CO4	Identify the specifications of peripheral chip
CO5	Design 8086 based system using memory and peripheral chips
CO6	Appraise the architecture of advanced processors

Subject: Database Management System, Course Code: CSC502

CO1	Understand the fundamentals of a database systems
CO2	Design and draw ER and EER diagram for the real-life problem.
CO3	Convert conceptual model to relational model and formulate relational algebra queries.
CO4	Design and querying database using SQL.
CO5	Analyze and apply concepts of normalization to relational database design.
CO6	Understand the concept of transaction, concurrency and recovery.

Subject: Computer Networks, Course Code: CSC503

CO1	Demonstrate the concepts of computer networks and compare OSI-ISO model with TCP-IP model.
CO2	Understand the concepts of data communication at physical Layer.
CO3	Explore different design issues at data link layer.
CO4	Design the network using ip addressing and subnetting / supernetting schemes and analyze various routing protocols.
CO5	Analyze transport layer protocols and congestion control algorithms.
CO6	Explore different protocols at application layer.

Subject: Theory of Computer Science, Course Code: CSC504

CO1	Identify the central concepts in theory of computation for design of FA and and differentiate between deterministic and nondeterministic automata, also obtain equivalence of NFA and DFA.
CO2	Infer the equivalence of languages described by finite automata and regular expressions.
CO3	Devise regular, context free grammars while recognizing the strings and tokens

CO4	Design pushdown automata to recognize the language and develop an understanding of computation through Turing machine
CO5	Acquire fundamental understanding of decidability and undecidability
CO6	Ability to develop good communication skills and teamwork

Subject- Department Level Optional Course-I, Multimedia System Course Code-CSDLO5011

CO1	To identify basics of multimedia and multimedia system architecture.
CO2	To explain concepts related to different multimedia components.
CO3	To explain file formats for different multimedia components.
CO4	To analyze the different compression algorithms.
CO5	To describe various multimedia communication techniques.
CO6	To apply different security techniques in multimedia environment

Subject: Microprocessor Lab Course Code-CSL501

CO1	Use appropriate instructions to program microprocessor to perform various tasks
CO2	Develop the program in assembly/mixed language for intel 8086 processor
CO3	Demonstrate the execution and debugging of assembly language program
CO4	Demonstrate the interfacing of peripheral device with microprocessor
CO5	Test the use of flag register
CO6	Demonstrate the execution and debugging of mixed language program

Subject: Computer Network Lab, Course Code: CSL502

CO1	Design and setup networking environment in Linux.
CO2	Use Network tools and simulators such as NS2, Wireshark etc. to explore networking algorithms and protocols.
CO3	Implement programs using core programming APIs for understanding networking concepts.

Subject: Database & Information System Lab, Course Code: CSL 503

CO1	Design and draw ER and EER diagram for the real life problem with software tool.
CO2	Create and update database and tables with different DDL and DML statements.
CO3	Apply /Add integrity constraints and able to provide security to data.
CO4	Implement and execute Complex queries.
CO5	Apply triggers and procedures for specific module/task
CO6	Handle concurrent transactions and able to access data through front end (using JDBC ODBC connectivity.)

Subject- Web Design Lab, Course Code- CSL504

CO1	Summarizing and recalling the core concepts and features of web technology
CO2	Exemplifying and implementing static web pages using html5 and css3
CO3	Explain the concept of client side validation and implement dynamic web pages using javascript and jquery.
CO4	Describe client and server side technologies and apply to implement interactive web pages using php , ajax with database connectivity using mysql.
CO5	Explain the basics of xml, dtd and xsl and develop web pages using xml / xslt
CO6	Analyze end user requirements and create web application using appropriate web technologies and web development framework

Subject- Business Comm. & Ethics, Course Code- CSL505

CO1	Design a technical document using precise language, suitable vocabulary and apt style.
CO2	Develop the life skills/interpersonal skills to progress professionally by building stronger relationships
CO3	Demonstrate awareness of contemporary issues, knowledge of professional ans ethical responsibilities
CO4	Apply the traits of a suitable candidate for a job / higher education , upon being trained in the techniques of holding a group discussion, facing interviews and writing resume / sop
CO5	Deliver formal presentations effectively implementing the verbal and non-verbal skills.
CO6	Demonstrate awareness on intellectual property rights and responsible use of social media

TE: VI SEM (REV- 2016 'CBCGS' Scheme)

Subject- Software Engineering, Course Code- CSC601

CO1	Understand and demonstrate basic knowledge in software engineering.
CO2	Identify requirements, analyze and prepare models.
CO3	Plan, schedule and track the progress of the projects.
CO4	Design & develop the software projects.
CO5	Identify risks, manage the change to assure quality in software projects.
CO6	Apply testing principles on software project and understand the maintenance concepts

Subject- System Programming and Compiler Construction, Course Code- CSC602

CO1	Identify the relevance of different system programs.
CO2	Describe the various data structures and passes of assembler design.
CO3	Identify the need for different features and designing of macros
CO4	Distinguish different loaders and linkers and their contribution in

	developingefficient user applications.
CO5	Construct different parsers for given context free grammars
CO6	Justify the need of synthesis phase to produce optimized object code in terms of high execution speed and less memory usage

Subject: Data Warehousing & Mining Course Code - CSC 603

CO1	Understand Data Warehouse fundamentals, Data Mining Principles.
CO2	Design data warehouse with dimensional modelling and apply OLAP operations.
CO3	Identify appropriate data mining algorithms to solve real world problems
CO4	Compare and evaluate different data mining techniques like classification, prediction, clustering and association rule mining
CO5	Describe complex data types with respect to spatial and web mining.
CO6	Benefit the user experiences towards research and innovation.

Subject: Cryptography & System Security Course Code - CSC604

CO1	Student should be able to explain system security goals and concepts, classical encryption techniques and acquire fundamental knowledge on the concepts of modular arithmetic and number theory
CO2	Student should be able to compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication
CO3	Student should be able to apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes.
CO4	Student should be able to apply different digital signature algorithms to achieve authentication and design secure applications
CO5	Student should be able to explain network security basics, analyze different attacks on networks and evaluate the performance of firewalls and security protocols like ssl, ipsec, and pgp.
CO6	Student should be able to analyze and apply system security concept to recognize malicious code.

Subject: Machine Learning Course Code - CSDLO6021

CO1	Explain machine learning and identify the steps in machine learning.
CO2	Design a neural network using McCulloch Pitts model and Apply Optimization techniques.
CO3	Apply Regression and Decision tree techniques for prediction.
CO4	Explore and evaluate different Machine learning techniques like classification and clustering.
CO5	Apply dimensionality reduction techniques.
CO6	Design application using machine learning techniques

Subject: Advanced Database management system

C01	Design distributed database using the various techniques for query processing
C02	Measure query cost and perform distributed transaction management
C03	Organize the data using XML and JSON database for better interoperability
C04	Compare different types of NoSQL databases
C05	Formulate NoSQL queries using MongoDB
C06	Describe various trends in advance databases through temporal, graph based and spatial based databases

Subject :ERP, Course code : CSDLO6023

CO1	To understand the basic structure of ERP.
CO2	To identify implementation strategy used for ERP
CO3	To apply design principles for various business modules in ERP
CO4	To apply different emerging technologies for implementation of ERP
CO5	To analyze security issues in ERP
CO6	To acquire ERP concepts for real world applications

Subject-Software Engineering Lab, Course Code- CSL601

CO1	Identify requirements and apply process model to selected case study.
CO2	Analyze and design models for the selected case study using UML modelling.
CO3	Use various software engineering tools.

Subject- System Programming and Compiler Construction, Course Code- CSL602

CO1	Generate machine code by using various databases generated in pass one of two pass assembler.
CO2	Construct different databases of single pass macro processor.
CO3	Identify and validate different tokens for given high level language code
CO4	Parse the given input string by constructing Top down /Bottomup parser
CO5	Implement synthesis phase of compiler with code optimization techniques
CO6	Explore various tools like LEX and YACC

Subject: Data Warehousing & Mining Lab Course Code - CSL 603

CO1	Design data warehouse and perform various OLAP operations.
CO2	Implement classification, prediction, clustering and association rule mining algorithms.
CO3	Demonstrate classifications, prediction, clustering and association rule mining algorithms on a given set of data sample using data mining tools.
CO4	Implement spatial and web mining algorithms.

Subject: System Security Laboratory Course Code - CSL604

CO1	Student should be able to apply the knowledge of symmetric cryptography to implement simple ciphers.

CO2	To be able to analyze and implement public key algorithms like rsa and el gamal.
CO3	To analyze and evaluate performance of hashing algorithms.
CO4	To explore the different network reconnaissance tools to gather information about networks and use of tools like sniffers, port scanners and other related tools for analysing packets in a network.
CO5	To be able to set up firewalls and intrusion detection systems using opensource technologies and to explore email security.
CO6	To be able to explore various attacks like buffer-overflow, and web-application attacks.

Subject-Mini-Project, Course Code- CSP605

CO1	Acquire practical knowledge within the chosen area of technology for project development.
CO2	Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach
CO3	Contribute as an individual or in a team in development of technical projects
CO4	Develop effective communication skills for presentation of project related activities

BE: VII SEM (REV- 2016 'CBCGS' Scheme)

Subject- Digital Signal & Image Processing, Course Code- CSC701

CO1	Apply the concept of DT Signal and DT Systems
CO2	Implement Digital Signal Transform techniques DFT and FFT.
CO3	Use the enhancement techniques for digital Image Processing.
CO4	Differentiate between the advantages and disadvantages of different edge detection techniques.
CO5	Develop small projects of 1-D and 2-D Digital Signal Processing
CO6	Classify and analyze discrete time signals and systems

Subject- Mobile Communication & Computing, Course Code- CSC702

CO1	To identify basic concepts and principles in mobile communication & computing, cellular architecture.
CO2	To describe the components and functioning of mobile networking.
CO3	To classify variety of security techniques in mobile network
CO4	To apply the concepts of WLAN for local as well as remote applications
CO5	To describe and apply the concepts of mobility management
CO6	To describe Long Term Evolution (LTE) architecture and its interfaces

Subject-Artificial Intelligence & Soft Computing, Course Code- CSC703

CO1	Identify the various characteristics of Artificial Intelligence and Soft Computing techniques.

CO2	Choose an appropriate problem-solving method for an agent to find a sequence of actions to reach the goal state.
CO3	Analyse the strength and weakness of AI approaches to knowledge representation, reasoning and planning.
CO4	Construct supervised and unsupervised ANN for real world applications.
CO5	Design fuzzy controller system.
CO6	Apply Hybrid approach for expert system design.

Subject - Big Data Analytics Course Code – CSDLO7032

CO1	Understand the key issues in big data management and its associated applications for business decisions and strategy.
CO2	Develop problem solving and critical thinking skills in fundamental enabling techniques like Hadoop, Mapreduce and NoSQL in big data analytics.
CO3	Collect, manage, store, query and analyze various forms of Big Data.
CO4	Interpret business models and scientific computing paradigms and apply software tools for big data analytics.
CO5	Adapt adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc.
CO6	Solve Complex real world problems in various applications like recommender systems, social media applications, health and medical systems, etc.

Subject- Cyber Security and Laws, Course Code- ILO 7019

CO1	Understand the concept of cybercrime and its effect on outside world
CO2	Understand different cyber offences and cyber crime on different environment
CO3	Analyse various tools used in performing cybercrime
CO4	Understand the legal requirement of cyberspace
CO5	Distinguish different aspects of cyber law
CO6	Identify the need for different Information Security Standards compliance during software design and development

Subject-Project Lifecycle Management, Course Code-ILO7011

CO1	Students should be able to explain the phases of PLM, PLM strategies and methodology for PLM feasibility study and PDM implementation.
CO2	Students should be able to illustrate various approaches and techniques for designing and developing products.
CO3	Students should be able to apply product engineering guidelines / thumb rules in designing products for moulding, machining, sheet metal working etc.
CO4	Students should be able to acquire knowledge in applying virtual product development tools for components, machining and manufacturing plant
CO5	Students should be able to illustrate various environmental aspects in product design

CO6	Students should be able to demonstrate the relevance between Understand product lifecycle assessment and life cycle cost analysis.

Subject:Management InformationSystem,Course code-ILO7013

CO1	Explain how Information Systems transform Business.
CO2	Discuss the importance of Data and Knowledge Management.
CO3	Analyse the various ethical issues and privacy concepts related to Information Systems.
CO4	Examine the role of Social Computing in today's society.
CO5	Describe how Computer Networks are backbones for Information Systems.
CO6	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for the business.

Subject: Operation Research Course code-ILO7015

CO1	Apply OR techniques to formulate and solve real-world problem.
CO2	Develop an integrated framework for strategic thinking and problem solving.
CO3	Identify mathematical tools that are needed to solve optimisation problems.
CO4	Identify appropriate decision making approaches and apply tools to be used.
CO5	Analyse situations in manufacturing environment and optimizing the solution.
CO6	Identify features of operations and production management and provide solution.

Subject- Cyber Security and Laws, Course Code- ILO 7016

CO1	Understand the concept of cybercrime and its effect on outside world
CO2	Understand different cyber offences and cyber crime on different environment
CO3	Analyse various tools used in performing cybercrime
CO4	Understand the legal requirement of cyberspace
CO5	Distinguish different aspects of cyber law
CO6	Identify the need for different Information Security Standards compliance during software design and development

Digital Signal & Image Processing Lab, Course Code- CSL701

CO1	Sample and reconstruct the signal
CO2	Implement and apply operations like convolution, corelation, DFT, FFT on DT signals.
CO3	Implement spatial domain image enhancement techniques.
CO4	Implement edge detection techniques using first order derivative filters.

Subject-Mobile App. Development Tech. Lab, Course Code- CSL702

CO1	To develop and demonstrate mobile applications using various tools.
CO2	Students will articulate the knowledge of GSM, CDMA & Bluetooth technologies and demonstrate it.
CO3	Students will able to carry out simulation of frequency reuse , hidden terminal

	problem.
CO4	To develop security algorithms for mobile communication network.
CO5	To demonstrate simulation and compare the performance of Wireless LAN.
CO6	To implement and demonstrate mobile node discovery and route maintains.

Subject-Artificial Intelligence & Soft Computing Lab, Course Code- CSL703

CO1	To realize the basic techniques to build intelligent systems
CO2	To create knowledge base and apply appropriate search techniques used in problem solving
CO3	Apply the supervised/unsupervised learning algorithm
CO4	Design fuzzy controller system

Subject-Computational Lab-I, Course Code- CSL704

CO1	Students should be able to apply map reduce programming model to any sorts of programs
CO2	Students should be able to apply and use the ecosystem components to the scenarios applicable.
CO3	Students should be able to demonstrate NoSQL databases and understand its importance.
CO4	Students should be able to demonstrate SPARK and apply the knowledge of SCALA for analytics.
CO5	Students should be able to apply machine learning techniques for big data analytics.
CO6	Students should be able to apply concepts of data mining for big data analytics.

Subject- Major-Project I, Course Code- CSP705

CO1	Student should be able to identify quality problem on the basis of industry visit,literature survey or current trends.
CO2	Student should be able to define the problem clearly which will have solution that can be applied to solve real world problems.
CO3	Student should be able to formulate the problem which will be specific to certain domain Like machine learning,Data mining ,networking.
CO4	Student should be able to clearly define objective and scope of identified problems
CO5	Student should be able to position their problem based on identification of gap based on literature survey.
CO6	Student should be able to develop good communication skills and team work.

BE: VIII SEM (REV- 2016 'CBCGS' Scheme)

Subject-Human Machine Interaction, Course Code- CSC801

CO1	Student should be able to Identify User Interface (UI) design principles.
CO2	Student should be able to Analysis of effective user friendly interfaces.
CO3	Student should be able to Apply Interactive Design process in real world applications.
CO4	Student should be able to Evaluate UI design and justify.
CO5	Student should be able to Create application for social cause.
CO6	Student should be able to Create application for technical task.

Subject-Distributed Computing, Course Code- CSC802

CO1	Demonstrate knowledge of the basic elements and concepts related to distributed system technologies
CO2	Analyze and evaluate different types middleware technologies that support distributed applications such as RPC, RMI and Object based middleware.
CO3	Analyze the various techniques used for clock synchronization and mutual exclusion
CO4	Demonstrate the concepts of Resource and Process management and synchronization algorithms
CO5	Demonstrate the concepts of Consistency and Replication Management
CO6	Apply the knowledge of Distributed File System to analyze various file systems like NFS, AFS and the experience in building large-scale distributed applications.

Subject-Department Level Optional Course -IV, Course Code-CSDLO 8012

CO1	Describe the concepts of NLP, its capabilities, issues and challenges
CO2	Apply fundamental mathematical models, design and implement algorithms for various stages of NLP problems.
CO3	Develop understanding about the structure of language, its morphological subsystems, recognition and morphological parsing with various regular language automata.
CO4	Describe the concept of syntax, semantics, pragmatics and discourse of NLP and recognize their significance.
CO5	Model various linguistic phenomena with various techniques such as POS tagging, Word disambiguation, reference resolution etc.
CO6	To apply NLP techniques to design real world NLP applications such as machine translation, text categorization, text summarization, information extraction

Subject- High Performance Computing, Course Code- DLO8011

CO1	Memorize parallel processing approaches
CO2	Describe different parallel processing platforms involved in achieving High Performance Computing.
CO3	Discuss different design issues in parallel programming
CO4	Design parallel algorithms considering decomposition and Mapping Techniques for Load Balancing
CO5	Develop efficient and high performance parallel programming
CO6	Learn parallel programming using message passing paradigm using opensource

	APIs.

Subject: Project Management,Course code-ILO8021

CO1	Gain project management foundation and various organizational structures knowledge.
CO2	Apply selection criteria and select an appropriate project from different options.
CO3	Write work break down structure for a project and develop schedule based on it.
CO4	Identify opportunities and threats to the project and decide an approach to deal with them strategically.
CO5	Use Earned value technique and determine& predict status of the project.
CO6	Capture lessons learned during project phases and document them for future reference.

Subject:Finance Management, Course code-ILO8022

CO1	Students should be able to explain the importance and components of the Indian Financial System.
CO2	Students should be able to estimate the risk & returns and present / future value of of various investments.
CO3	Students should be able to describe corporate finance and significance of financial statements & ratio analysis.
CO4	Students should be able to calculate capital budgeting using various investment appraisal criteria's& also the working capital requirements.
CO5	Students should be able to explain the various sources of finance and capital structure theories & approaches.
CO6	Students should be able to describe the dividend policy theories & approaches.

Subject: Digital Business Management, Course code-ILO8028

CO1	Summarize drivers of digital business.
CO2	Illustrate various approaches and techniques for E-business and management.
CO3	Explain different digital business support services and technologies in E-Infrastructure.
CO4	Explain various ethics and societal impacts of ecommerce.
CO5	Identify the need of security and summarize various security techniques.
CO6	Develop E-business plan.

Subject: Environmental Management, Course code-ILO8029

CO1	Identify environmental Issues relevant to India and Global concerns.
CO2	Understand and apply the concept of Environment Management and Sustainable development.
CO3	Relate to the scope of Environment Management and identify career opportunities.
CO4	Understand the concept of ecology, Ecosystem, its interdependence and food

	chain.
CO5	Demonstrate awareness of environment related legislations.
CO6	Develop awareness of EMS and ISO-14000.

Subject-Human Machine Interaction Lab, Course Code- CSL801

CO1	Student should be able to design user centric interfaces.
CO2	Student should be able to design innovative and user friendly interfaces.
CO3	Student should be able to apply HMI in their day-to-day activities.
CO4	Student should be able to criticize existing interface designs, and improve them.
CO5	Student should be able to Design application for social Task.
CO6	Student should be able to Design application for Technical Tasks.

Subject-Distributed Computing Lab, Course Code- CSL802

CO1	Implement the main underlying components of distributed systems (such as IPC, name resolution, file systems etc.)
CO2	Develop, test and debug RPC/RMI based client-server programs.
CO3	Implement various techniques of synchronization.
CO4	Design and implement application programs on distributed systems.

Subject- Cloud Computing Lab, Course Code- CSL803

CO1	Explain the cloud architecture and its services
CO2	Adapt different types of virtualization and increase resource utilization.
CO3	Build a private cloud using open source technologies.
CO4	Analyze security issues on cloud..
CO5	Develop real world web applications and deploy on commercial cloud.
CO6	Demonstrate various service models

Subject-Computational Lab-II, Course Code- CSL804

CO1	Have a broad understanding of the field of natural language processing.
CO2	Have a sense of the capabilities and limitations of current natural language technologies,
CO3	Be able to model linguistic phenomena with formal grammars.
CO4	Be able to Design, implement and test algorithms for NLP problems.
CO5	Understand the mathematical and linguistic foundations underlying approaches to the various areas in NLP.
CO6	Be able to apply NLP techniques to design real world NLP applications such as machine translation, text categorization, text summarization, information extraction..etc.

Subject-Computational Lab-II (HPC), Course Code- CSL804

CO1	Develop efficient and high performance parallel programming Using MPI
CO2	Learn parallel programming using message passing paradigm using open

	source APIs.
CO3	Evaluate performance Enhancement

Subject- Major-Project II, Course Code- CSP805

CO1	Student should be able to carry out literature survey/visit industry/analyse current trends in the proposed domain.
CO2	Student should be able to define the problem based on identification of gaps based on literature survey.
CO3	Student should be able to formulate the problem, clearly define objectives, investigate the scope of identified problems and design the methodology to solve the problem
CO4	Student should be able to implement the proposed design, specific to certain domain like image processing, machine learning,data mining ,networking using suitable tools.
CO5	Student should be able to perform validations,testing and thorough evaluation of the investigation carried out and signify the contributions from the study.
CO6	Student should be able to work effectively as an individual or in a team by managing the finance, timeline and produce the documents.